Pick QUALITY Cotton

A Manual on Mechanical Cotton Pickers

Circular 246

Agricultural Extension Service, University of Arizona

Contents

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A Manual on Mechanical Cotton Pickers

These suggestions for the improvement of mechanical picking have been developed by picker manufacturers, Land-Grant College Research and Extension Service departments in cotton producing states, and the U. S. Department of Agriculture in cooperation with the National Cotton Council. They offer a basis for an educational program on harvesting cotton with mechanical pickers to preserve the quality of the cotton fiber. The results of such a program will greatly strengthen U. S. cotton in its battle for both the domestic and foreign markets.

During the past decade, mechanization of cotton production has undergone the greatest progress of all time. Continued progress is desirable and should result in more efficient cotton production on many farms.

With this progress, there has come not only wide-spread use of tractors and closely related equipment, but also increased use of mechanical cotton pickers. The number of mechanical cotton pickers on farms has increased from less than 4,000 in 1950 to approximately 19,000 in 1955.

The quantity of cotton now being harvested with these pickers is about 20 percent of the crop across the cotton belt. (Approximately 40 percent of the cotton in Arizona is harvested with machines.) All indications are that mechanical harvesting will continue to increase from year to year.

Along with the many benefits which mechanical pickers are bringing to the cotton industry, there

are some problems in preserving cotton's quality. The evidence is clear that most of these troubles result from poor care, adjustment, and operation of machines, and from picking cotton when it is too damp.

Most of the suggestions in this circular relate these inadequacies or mal-practices to the damage they cause to cotton quality. Adjustment of the machine for quality cotton preservation is identical with good picking efficiency.

General Recommendations

In order to obtain the best qualities of cotton possible with mechanical cotton pickers, each owner and operator of cotton pickers should give special attention to the following:

1. Follow all recommended preharvest production practices which are designed to give better cotton quality and more efficient mechanical picking.

2. Maintain cotton-picking machines according to the recommendations of the manufacturers of these machines with respect to repair, adjustments, cleanliness and replacement of worn parts. In replacing machine parts, always use only replacements which fully meet the manufacturer's specifications and standards.

3. Study carefully the Operator's Handbook or Manual furnished by the manufacturer with each cotton-picking machine. Follow the recommendations closely at all times.

4. Wait until sufficient cotton is open before harvesting.

5. Do not harvest with mechanical pickers when cotton is green or damp. Apply only enough moisture for maintaining clean spindles and efficient picking. If wetting agents are used, follow picker manufacturer's recommendations carefully.

6. In the operation of cotton pickers, good supervision is needed at all times. This supervision should include not only machine operation but also inspections for cleanliness, needed adjustments, general machine upkeep, moisture rates, and other features which affect quality and efficiency.

7. In handling and storing mechanically picked seed cotton, give careful attention to prevent damage to the fibers and reduction in quality. Store only low-moisture seed cotton to prevent damage to the fiber.

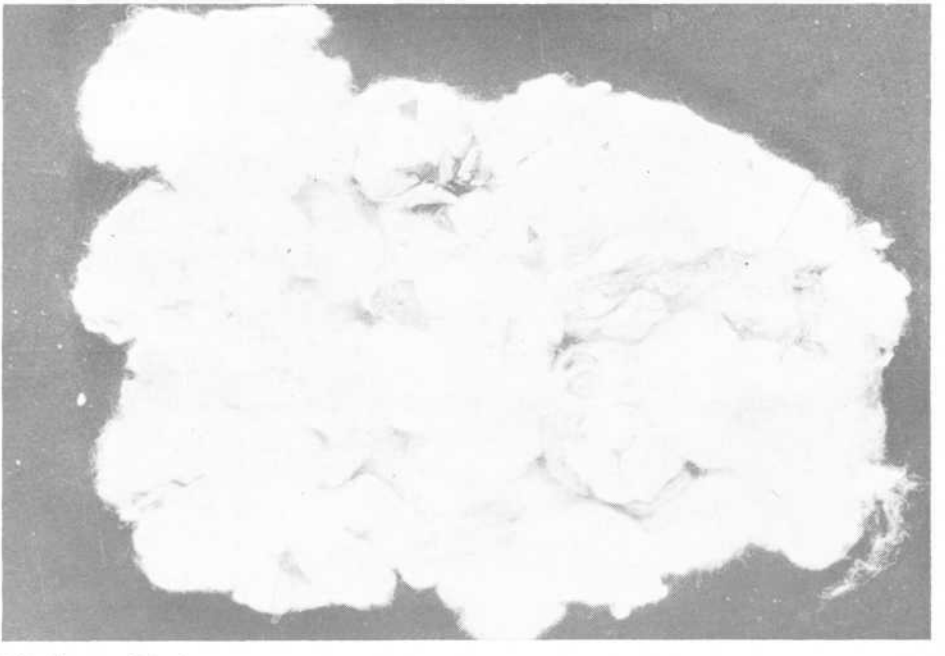
8. Farmers and ginners can cooperate for quality ginning, especially in developing and following a grouping pattern at gins so that like qualities of cotton will be processed together for quality preservation and maximum dollar returns.

Major Cotton Quality Preservation Problems Associated With Mechanical Cotton Pickers

(The order in which the following material is presented does not necessarily indicate the importance of the items.)

Lint Condition	Possible Cause	Suggested Remedies
Picker Twist	Improper doffing	a. Keep picking unit in good mechanical condition. b. Use spindles that meet specifications of machine manufacturer. c. Shim all spindle bars to same elevation in order to obtain proper adjustment of doffer to spindle. d. Replace worn doffers or stripper shoes. e Keep spindles, doffers, strippers, and moistener system clean. f Use correct moisture on spindles. g Clean out picker drum or picker unit each time basket is dumped.
	Excessive moisture	a Do not pick when cotton is green or damp. b Adjust moistener column and pads to spindles. c Apply only enough moisture to keep spindles clean and to get efficient picking.
	Insufficient moisture	a Regulate water applied to spindles. b Adjust moistener pads to spindles. c. Proper moisture increases picker efficiency.
	Speed	a Operate at full throttle for proper spindle, fan, and doffer speeds. b. Enter row at operating speed. (Handpicking ends of rows aids in harvesting efficiency.) c. Operate picker-head and forward travel of tractor in matching gears.

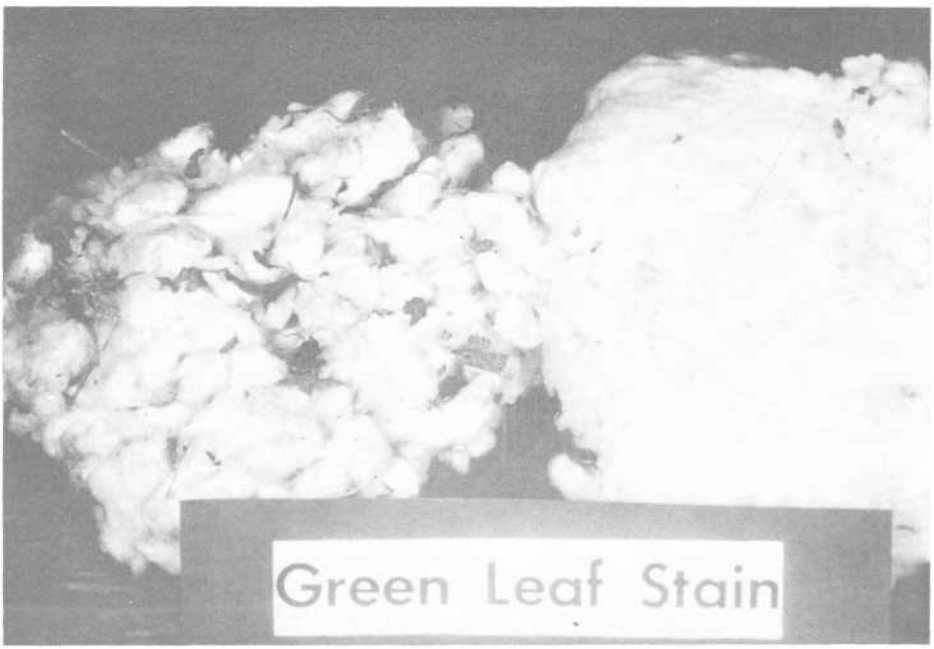
Lint Condition	Possible Cause	Suggested Remedies
Picker Twist (Continued)		
		d Engine speed should not be changed from manufacturer's recommendation. (Governor wear may cause reduced speed at full throttle. Check proper RPM.)
	Plant juices	a. Obtain timely defoliation. b Obtain timely harvest. c. Clean spindles and adjust moisture to prevent buildup of plant juices.



Picker Twist

Twisted cotton is a mass of fibers which have become entangled, usually severely knotted, and are generally discolored by oil, grease, plant juices, or dirt. Picker twist means trouble for everyone — lower grade and price for the farmer — processing difficulties, more waste, spots and streaks for the manufacturer.

Lint Condition	Possible Cause	Suggested Remedies
Green Leaf Stain	Poor defoliation	a Use state and local recommended practices to obtain maximum leaf drop.
	Regrowth	a Use proven regrowth inhibitors in defoliant. b. Limit defoliation to rate of harvest.
	Excessive moisture	a. Do not pick when cotton is green or damp. b. Apply only enough moisture for efficient picking.



Green Leaf Stain

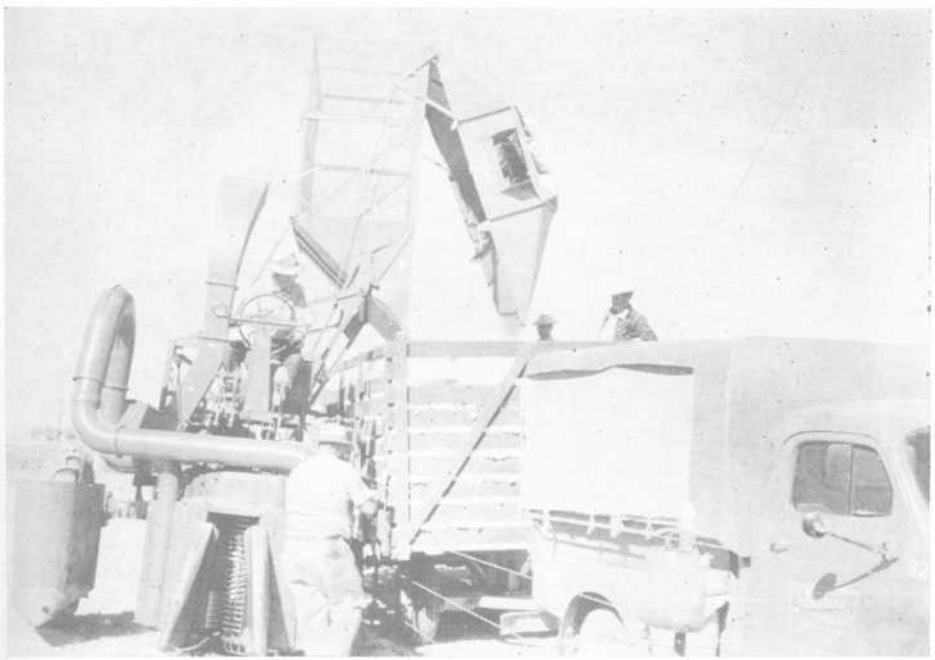
Green leaf stain is a serious quality defect. Defoliation of rank heavily vegetated plants is a must to control green leaf stain. However, it may not be economical to defoliate under all conditions — especially when insect, disease or drought conditions have naturally defoliated most of the plants.

Lint Condition	Possible Cause	Suggested Remedies
Green Leaf Stain (Continued)		
	Too much pressure on plants	a. Too much pressure may increase stain; reduce pressure. b. Adjust plate away from spindle. c. Adjust to give efficiency without excessive staining.
	Excessive packing increases stain	a. Do not tramp cotton in picker baskets. b. **Fill**, but do not tramp cotton **excessively** in trailers.
	Storage	a. Seed cotton containing green leaf should be ginned as soon as practical. b. If storage is necessary take precautions to prevent heating. c. Store only low-moisture seed cotton.
Excessive Trash	Collection in and around basket	a Clean out lint streamers, fly, and trash after each dumping. b. Do not put this in trailer with seed cotton. c. Adjust basket grates for best cleaning and air flow.
	Collection in and around pickerhead and in conveyor system	a Keep trash cleaned out to prevent heavy accumulation. b. **Do not put cleanout material in picker basket or trailer.**
	Trashy harvestings mixed with good harvestings	a. Do not put both good and bad in same trailer. b. Always dump and clean out basket when changing field conditions which may affect quality. c. Have enough trailers available to carry out "a" and "b" above.
	Too much pressure on plants	a. Reduce pressure for large plants and dense foliage. b. Adjust plate away from spindle.

Lint Condition	Possible Cause	Suggested Remedies

Excessive Trash (Continued)

Collection of trash and dirt from ground surface	a.	Adjust height and tilt of drum or picking unit so as to avoid pick-up of trash and dirt.
Poor defoliation	a	Use state and local recommended practices to obtain maximum leaf drop.
	b.	Use proven regrowth inhibitors in defoliant.
	c.	Limit defoliation to rate of harvest.
Excessive plant growths	a.	No harvesting machine recommendations.



Trash

Checking and cleaning out the picker head at each dump assures better picking efficiency and preserves cotton quality. Improper machine adjustment and operation give machine picked cotton a bad reputation. Trained operators are a must.

Lint Condition	Possible Cause	Suggested Remedies
Oil and Grease	Oils applied to spindles	a. Do not substitute oils for water.
	Too much oil or grease used on parts which come in contact with cotton	a. Follow manufacturer's recommendations carefully. b. Do not over-lubricate. c. Wipe off excess lubricant.
	Accumulations of oils and greases in and around picker-head	a. Wash out thoroughly with water under pressure at the end of each day of operation. b. Lubricate immediately after washing. c. Prevent oil leaks. d. Correct oil leaks immediately. e. Keep picker spindles, doffer shafts, and cleaner wheel shafts free of oil, grease, lint, and other foreign material accumulations.

Oil & Grease

Cotton contamination by lubricants has to be removed by hand. If it is not discovered it causes breakage of yarn, bleaching and dyeing difficulties, increases processing costs and lowers the quality of end products. Such defects make the mill owner turn to synthetics.

Lint Condition	Possible Cause	Suggested Remedies
Bark	Driving off row	a. Operators must at all times keep picker centered on row of cotton plants.
	Too much pressure on plants	a Reduce pressure for large plants and dense foliage. b Adjust plate away from spindle.
	Excessive speeds	a Operate in low speed when plants are large (this is particularly important in early season or first time over.) b Speed of picker and speed of picker-head must be synchronized.
Extraneous Matter *(Cotton Classer's designation)* **Grass, Weeds, and Vines**	Grass, weeds, and vines in cottonfield	a No harvesting machine recommendation. Follow state and local recommendations for weed, grass, and vine control. Follow other approved cultural practices.

Don't Forget To Do These Things

- Use all pre-harvest production practices favorable to mechanical picking.
- Maintain condition of cotton picker for efficient harvesting of quality cotton.
- Discard dirty and oil-stained cotton and trash or other foreign materials, cleaned from picker head, conveyor system and basket.
- Operate cotton picker for best quality as well as maximum efficiency.
- Handle and gin to get better quality and higher prices.